

**OPTICAL WAVEGUIDE GRATING COUPLER INCORPORATING REFLECTIVE
OPTICAL ELEMENTS AND ANTI-REFLECTION ELEMENTS**

Abstract

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An optical wavelength grating coupler incorporating one or more distributed Bragg reflectors (DBR) or other reflective elements to enhance the coupling efficiency thereof. The grating coupler has a grating comprising a plurality of scattering elements adapted to scatter light along a portion of an optical path, and the one or more DBRs are positioned with respect
10 to the grating such that light passing through the grating towards the substrate of the grating coupler is reflected back by DBRs toward the grating. The DBR comprises a multilayer stack of various materials and may be formed on the substrate of the grating coupler. The grating coupler may include a gas-filled cavity, where the cavity is formed by a conventional etching process and is used to reflect light toward the grating. The grating coupler may also
15 incorporate an anti-reflection coating to reduce reflective loss on the surface of the grating.